Appendix P
Natural Environmental Issue: System Evaluation Considerations

P–1. Overview of the natural environment

An Army objective is to develop systems that will perform adequately under the environmental conditions likely to be found in the areas of intended use. The climatic conditions, as well as performance standards for operations, storage, and transit for each system, are specified in the ORD and the Life Cycle Environmental Profile (LCEP) or specifications. The necessity of testing systems in climatic chambers and at desert, tropic and arctic test sites to support the system evaluation is determined by review of these requirements and according to Army policy.

a. Systems will be tested and evaluated for their ability to remain safe, effective, suitable, and reliable in those environments in which they will be stored, transported, handled, and operated. Natural field environments, such as those at ATEC test centers that represent conditions of the various Climatic Design Types as described in AR 70–38, will be considered in the overall testing of systems to ensure the system will be subjected to the synergistic effects those natural environments provide.

b. Prior to testing in natural environments, testing in climatic chambers will be considered. Results of climatic chamber testing may be used to evaluate the system's ability to satisfy its performance requirements. Chamber tests may also be valuable in assessing the risk associated with not conducting tests in the natural environment. Causes for failure in simulated environments must be resolved before the system is subjected to natural environment testing. Chamber tests and simulations play a significant role in the beginning of the development cycle but must be integrated with testing conducted in real world, natural environments.

P–2. Procedures

The system evaluators aid the CBTDEV and MATDEV in preparation of a LCEP as presented in MIL–STD–810F, Test Method Standard for Environmental Engineering Considerations and Laboratory Tests. The testers and evaluators help in the identification of expected system performance and reliability in the identified environments based on historical knowledge of similar systems, if available.

a. The testers and evaluators, in coordination with the T&E WIPT, determine which environmental testing is the best means of obtaining the desired performance and safety data. The results obtained from laboratory environmental tests, along with LCEP information, is used to determine the need and types of natural environment tests beyond the Basic Climatic Design Type to which the system will be subjected.

b. The TEMP and SEP will identify system characteristics that might be abnormally affected by exposure to natural environments. These documents will also address the requirements to subject the system to those climatic effects that exist in areas of intended transportation and storage, as well as establish the need for long-range life cycle surveillance testing of systems in natural environments. As a minimum, the system evaluators will reflect, as one of their critical technical parameters, the ability of the system to operate in the Basic Climatic Design Type. A rationale is required when not using natural environment testing.

c. These requirements must satisfy the policies set forth in AR 70–38.